cylinder process always ends free, and usually breaks up at the tip into a brush of fine fibrils, which may be called the "terminal brush."

As to the relations of these nerve units to each other, it must first be borne in mind that, according to these authors, no nerve fiber passes directly into a cell at each end; second, that no ganglion cell has more than one axis-cylinder process springing from it; and, third, that each of these units is anatomically quite distinct from all the others. They do, however, come into very close relations. They may be adjacent and intertwine their processes, but actual continuity cannot be demonstrated. All this leads so conservative a writer as Professor Obersteiner to remark: "Hence, although we were before obliged to assume a continuity of the elements for the uninterrupted propagation of the nervous excitation, now we may no longer utterly reject the view that possibly even their contiguity may have the same functional significance."*

While our own observations lead to the belief that Golgi's method is very unreliable as a histological process, yet the relations here described are very strongly suggested, even by some of our hæmatoxylin preparations; and there can be but little doubt that mere proximity or contiguity is sometimes sufficient for nervous transmission. It would seem, then, that the neuroglia, or ground substance of the brain, must be in some way able to act as a conductor of nervous force, or else the process of transmission is analogous to induction rather than conduction.

The same anatomical relations have been very recently discovered in the invertebrates. If these positions can be substantiated, what a revolution it will work in our conceptions of the nervous system! Our whole theory of the nervous mechanism must be reconstructed.

Much might be said of the recent advances in the localization of brain functions, particularly in man and the higher apes. But more significant still is the fact that attention is being directed from the brains of the lower animals to the mental processes of which they are the organs; and the day is not far distant when we shall have a science of comparative psychology. As our knowledge of the functions of the human brain have been derived chiefly from comparison with lower animals, it seems not unreasonable that the same method should bear good fruit in the study of the mind.

A BREATHING WELL IN LOGAN COUNTY.

BY J. T. WILLARD, KANSAS STATE AGRICULTURAL COLLEGE.

For a number of years Mr. R. L. Smith, of Winona, has noticed that two wells there blow out air at times and draw it in at other times. He has also noticed a close connection between their action and the weather. One well he has noticed more especially, and became so satisfied that the movement of air was connected with the state of the atmosphere that he called it a natural barometer. He was very desirous that the well should be observed by some scientific man with the necessary instruments. An aneroid barometer was sent him to make observations with, at the same time recording the state of the well. His observations indicated quite clearly that the movement of air in and out of the well was dependent on the pressure of the atmosphere. As the case seemed interesting, the writer visited the well, taking with him an excellent mercurial barometer and such other apparatus as seemed likely to be useful.

*Recent Views on the Structure of the Nervous System, Naturwissenschaftlichen Rundschau, VII, 1 and 2. Translated in Jour. Comp. Neurol., II, pp. 73–84.

The well was found to be a bored one, cased with lumber. It was about eight inches in diameter. Water is reached in this region at about 130 feet, but this particular well had been drilled much deeper. This fact had no influence on the blowing of air, however, as other wells in the vicinity not over 135 feet deep show the same phenomenon. The well is abandoned now, on account of machinery having been lost in it which interferes with its use.

On reaching the well, the writer first sealed the top, by means of mortar and plaster of Paris, air-tight, inserting a one fourth inch brass tube to connect the well with a gauge. The gauge consisted of a simple U tube of glass, bent so that the two limbs were side by side. The bend of the tube, and for several inches up, was filled with water, and a scale behind the glass tubes measured any difference in height between the two columns of water. On connecting this gauge with the well, if air had been blowing out, its tension was measured by the height to which the water in the outer limb rose above that of the inner. If, on the contrary, air was being drawn into the well, on attaching the gauge the water would stand higher in the inner limb.

The following abstract from the observations made during four days will serve to show the connection between the movement of air to and from the well and the fluctuations of the barometer.

DATE.	*Time.*	*Barometer, in millimeters.*	*Gauge, in millimeters.**
August 27	4:30 P. M.	674.15	29
August 27	5:30 "	673.75	28
August 27	6:30 "	673.65	23
August 27	7:55 "	673.60	21
August 27	9:00 "	673.70	16
August 28	6:15 A. M.	674.30	0
August 28	7:45 "	674.35	1
August 28	8:45 "	674.15	2
August 28	9:35 "	674.45	0
August 28	8:45 P. M.	678.50	—31
August 29	7:25 A. M.	681.15	—33
August 29	8:30 "	681.55	—31
August 29	10:00 "	681.90	—30
August 29	11:30 "	681.90	—24
August 29	1:00 P. M.	681.65	—17
August 29	3:40 "	681.40	—10

*The minus sign indicates a drawing in of air, the water standing higher in the inner limb of the gauge.

The observations made showed conclusively that, the air of the well being stationary, if the barometer fell the air of the well at once exerted a pressure outward, as shown by the water gauge. Should the barometer then remain stationary, the tension of the air of the well became gradually less until equilibrium was again established. As this well was closed by the gauge, the evidence was conclusive that the tension was relieved by the escape of air from other openings, probably neighboring wells. Equilibrium being established, should the barometer rise, the gauge showed that the tension of the air of the well was less than that of the atmosphere, and this inequality was corrected by an inflow of air. If after a fall of the barometer a rise should ensue before equilibrium was established, the gauge would still show a greater internal tension; the well was therefore less delicate than the barometer, because of the interval of time required for the necessary movement of the air. After a sudden and considerable change of the barometer, a strong movement of air to or from the well would be caused, and this movement would continue for some hours, even though the barometer might be slowly returning to its original height.

These wells doubtless tap a subterranean reservoir of air, probably filling the interstices of sand or gravel beds. When the pressure of the external air is dimin-

ished, some of this imprisoned air escapes, and the greater the fall of the barometer the greater the force with which the air is expelled. My friend, Mr. Smith, utilized this air current to blow a whistle, which could be heard all over the town, warning the inhabitants of a possible storm. With a rising barometer, caused by an increase in the pressure of the air, air will be forced back into the subterranean reservoir. Mr. Smith tells me that when the air is going into the well, the water recedes a certain amount, and that when the air is blowing out, it can be heard bubbling through the water.

ADDITIONAL NOTE ON THE BRENHAM METEORITE.

BY ROBERT HAY.

About the end of 1891, the finds of the meteoric fall in Kiowa county were extended nearly a mile east of the former ones, and most of them are of a new type. Several groups were found, each in an area of several square yards, and having several hundred individuals. The aggregate number was about 3,000. Some of them

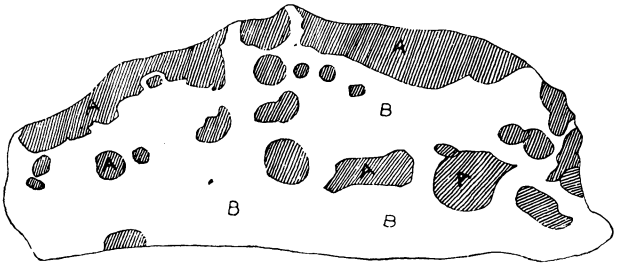

FIG. 14. POLISHED SECTION OF BRENHAM METEORITE; *a*, cavities containing olivene; *b*, Widmanstättian figures on polished surface.

seemed to be the decomposed parts of a larger mass, but the bulk of them were evidently separate meteorites. A few were about a pound in weight; others were from six or seven ounces down to the size of a pea. All were more or less oxidized; some had lost all their metallic structure, but some, even of the very smallest, had the true pallasite structure. A specimen (exhibited to the Academy) had been pronounced by Professor Foote, of Philadelphia, to be almost identical with the original meteorite of Pallas, which gives the name to this variety. There was one mass of nearly 80 pounds. There seem to have been no more finds, though the search was active.

NOTE ON THE OCCURRENCE OF GRANITE IN A DEEP BORING IN EASTERN KANSAS.

BY ROBERT HAY, F. G. S. A.

Four borings (one reaching 1,000 feet in depth) at Fort Scott have passed through the coal measures and subcarboniferous rocks at that place. The deep boring at Pittsburg (1,200 feet) is said by Mr. St. John to reach silurian rocks. The boring at Leavenworth (1,800 feet) is also said to have its bottom in siluria. Neither the well seven miles east of Wichita (1,943 feet) nor the boring at Anthony (2,300 feet)